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higher walks of painting, there was employment no more; and the shadows of Rembrandt, and the savageness of Salvator, arrested the admiration which was no longer permitted to be rendered to the gloom or the grotesqueness of the Gothic aisle. And thus the English school of landscape, culminating in Turner, is in reality nothing less than a healthy effort to fill the void which the destruction of Gothic architecture has left.

SECRETS OF THE GEMS.

THAT many things glitter which are not gold, is well known; but do the wearers of jewelry know that the bright and beautiful colors exhibited by most of their much prized gems are purely artificial? Nature supplies the raw material, and art steps in to embellish it. The brilliant necklace or bracelet, which, with the native hue of the stone, would by no means be considered ornamental, becomes matchless in tint and lustre after passing through the hands of the artificer. Your chemist, always discovering something, and always ready with marvellous transformations, is truly a remarkable personage. He is jealous of his secrets, but not always able to keep them. If he could set a seal on his doings, our readers would not have been entertained with the present article, in which we shall take leave to reveal some of his processes.

Let us begin with agate—rather a common stone, found almost everywhere, and in numerous varieties, among which are the chalcedony, cornelian, onyx, sardonyx, and heliotrope. They all consist principally of quartz, and are more or less pellucid. In some places they are surprisingly abundant. One of these places is Oberstein, some thirty or forty miles up the valley of the Nahe, a region not often visited by summer tourists, yet interesting enough to repay him who shall explore its devious by-ways and paths along the river. At the village just mentioned, and at Idal, four miles distant, formations of coarse red conglomerate are met with, interposed with trap and greenstone; and in a soft stratum in these rocks, agates are found in considerable quantities. The workings may indeed be called agate-quarries, for they are carried on in the precipitous side of a hill; and to him who sees them for the first time, there is something remarkable in the species of industry created by the presence of the stones.

The nodules of agate, as they come from their long-undisturbed bed, are generally of an ashen-gray color. The first operation in the process of transformation is to wash them perfectly clean; then to put them into a vessel containing a mixture of honey and water, which, being closely covered, is plunged into hot ashes for two or three weeks. The essential thing is to keep the liquid from boiling, but at a high temperature. After a sufficient interval, the stones are taken out, cleansed, passed through a bath of sulphuric acid, and then they undergo a second course of roasting in the hot ashes.

To produce a color in the stones, it is necessary they should be penetrated by some carbonisable substance. This is effected by the honey, which, under the influence of long-continued heat, finds its way into the interior of the crystal, where its carbonisation, if not complete in the first instance, is finished by the sulphuric acid. Some lapidaries use olive oil instead of honey. The shade of color depends on the porosity of the layers of the stone; the most porous become at times perfectly black. Some are colored in two or three hours, others in as many days, others in a week or two, and some resist all attempts to change their natural hue. Some, when taken out of the oven, are found to be a rich dark brown, or chocolate; others, again, having been penetrated by the coloring matter

between the layers, are striped alternately white, gray, and brown, like the onyx and sardonyx. By soaking the stones in a solution of sulphate of iron, and then placing them for a few hours in the oven, a fine cornelian red is produced in the porous layers, while those not porous remain unaltered. Thus it not unfrequently happens that very coarse and common stones—muddy-yellow, or cloudy-gray, which in their natural condition would be valueless, are passed off as stones of the first quality. It is only within the last forty years that this process has been known in Germany, but the Italian lapidaries were acquainted with it centuries ago. Hence we can account for the exquisite color of antique cameos and other ornaments once numerous in the cabinets of Italy, and now to be seen in museums and private collections in all parts of the world. The dealers, when making their purchases of what we may call the raw material, select what appears to be a desirable piece, and chipping off a minute portion, they moisten the exposed surface with the tongue, and watch the absorption of the moisture. If regular and equal, the stone is good for an onyx; if not, it is added to the heap of inferior varieties. This, however, is but a rough and ready test, and not always decisive.

The pores of the stones by which the color is conveyed and retained, are visible with the microscope, and the effect of various tints is produced according as the light falls upon them at different angles. The rainbow-agate is full of minute cells, which, when exposed to the sun, produce prismatic colors, as is observed in the strise of mother-of-pearl. To detect cavities in the stones, they are soaked in water, which, slowly penetrating, reveals the hollows. Some already contain water when first found; and it is a remarkable fact, that, if kept in a dry place, the water disappears, but without leaving the slightest trace of moisture on the surface, and the stones can only be refilled by boiling them.

Balls of striped red chalcedony are much prized; a large one, weighing a hundred pounds, was found in 1844 near Weisselberg, and was sold in the rough for 700 guilders. Some kinds of chalcedony are made to appear of a citron yellow, by a two days' roasting in an oven, and a subsequent immersion in a close hot bath of spirit of salt for two or three weeks. A blue color, which has all the effect of a turquoise, is also produced; but the particular coloring process has hitherto been kept a secret. Those stones which are naturally colored are at times roasted, to heighten the tint, and add to its permanency. The Brazilian cornelian becomes singularly lustrous under the process; the explanation being that the long-continued action of heat removes the oxyhydrate of iron contained in the stone, leaving it with a clear brightness diffused through the whole mass. The smallest stones are roasted before polishing; but the large ones, of which saucers, vases, cups, plates, &c., are made, are first cut into the required shape and thickness—otherwise, they fly to pieces when exposed to heat. After all the coloring operations have been gone through, the stones are ground on a wheel; soaked in oil for a day, to conceal the fine scratches, and give a good polish, and then cleaned off with bran.

Those who examined the collection of gems and works of Art from rare stones in the great Exhibition of 1851, will remember the elegant onyx vases of different colors—some streaked with white natural veins, the cups of red chalcedony, a chain of the same substance in large square links of different colors, and without visible joints; besides other objects so beautifully finished, that a prize medal was awarded to the manufacturers.

So far, we have been treating of methods by which art assists nature; we come now to the gems that are not found in the side of a quarry,

but formed in the chemist's laboratory. Before the days of Berlin wool and crochet work, young ladies used to amuse themselves by making crystalline baskets and trays, as ornaments for the mantel-piece, but they had first to dissolve their alum. The chemist works by other means; and especially since the application of electro-galvanism to his processes, there is something really wonderful in the results. He produces crystals at pleasure, and in lumps that would astonish those who once labored so hard in search of the philosopher's stone. A few years ago, M. Ebelman laid before the French Academy of Sciences specimens of artificial quartz—some white, others blue, red, and violet; and by mixing chlorure of gold with the silicic acid used in the composition, he produced a mass traversed throughout with delicate veins of gold, similar to the lumps brought from Australia or California. By a modification of his process, he produced hydrophane, that species of opal which is transparent only when immersed in water; and specimens also of the allied crystal, hyalite. In this operation, silicic ether and moist air are principally employed; and a variety of colors could be imparted by the admixture of different colored alcoholic solutions. Chloride of gold produces a beautiful topaz yellow; and by exposing the crystal for a time to light, the gold is dispersed through it in flakes, as in aventurin; and kept in sunlight, the flakes change to a violet or rose color, and become transparent. In this fact we have an extraordinary instance of molecular action—the distribution of metallic scales through a solid mass; one which, as some geologists suppose, helps to throw light on the mode of formation of rocks and minerals. That pieces of wood, plants, and animal substances, will become silicified, or, as is commonly said, petrified, is well known; and though often wondered at, the diffusion of the gold flakes through the crystal is yet more marvellous.

Besides Ebelman, two other savans—Senarmont and Bequerel—have obtained surprising results in the artificial formation of crystals and minerals. Some among their specimens of chrysolith and chrysoberyl were hard enough to cut glass. And many curious effects have been noted in the course of their investigations and experiments. Glass containing arsenic, though at first transparent, becomes cloudy and opaque, then waxy, and finally crystalline. A familiar instance of a similar effect is offered by barley-sugar, which gradually loses its transparency, and becomes somewhat waxy in texture. Another discovery was, that pounded loaf-sugar, mixed with sulphuric acid, forms a glutinous substance which, when dry, detonates like gun-cotton.

We might go on with these interesting results, which open novel views of the capabilities of chemical science; but for the present we content ourselves with a few words on ultramarine—a substance much used by artists, and by a certain class of artificers. Some years ago, it was prepared exclusively from *lapis lazuli*, a mineral found in Siberia, and was sold at prices varying from seven to twenty guineas the ounce, according to quality. But the chemists set to work upon it, prying, weighing, testing, and eventually discovered its constituents, but were long at a loss for the coloring principle. At last Guimet, of Lyons, hit on the idea of trying to combine the constituents in their natural proportions, as in the native mineral; and the result was that the color was produced, and ultramarine could be sold at two guineas a pound. The constituents are—silicate of alumina, soda, and sulphuret of sodium; and the color is supposed to be due to the action of the last on the two first. Guimet's success set other experimenters on the scent; the secret was recently discovered, and now ultramarine may be bought at 1s. 3d. a pound, and is largely used in many industrial processes.

But there is still another way of manufacturing artificial gems; and to make our article complete, we must finish with a short notice of it. Our clever allies across the channel have a credit of discovering and practising it with no small advantage to themselves. Just outside the Barrière du Trône, at Paris, stands a large factory, where a species of sand, brought from the Forest of Fontainebleau is converted into emerald, topaz, sapphire, and ruby. Artificial pearls are also produced in great numbers, and as they are lined with fish scales, an active fishery of roach and dace is kept up in the Seine during the spring months, when the fish are in their prime. But it is for the manufacture of diamonds that the factory is most celebrated—diamonds that deceive the eye of everybody but the maker. Thomas Carlyle has given us, among his *Essays*, a story concerning *The Diamond Necklace*, which lets us into the secret of a stupendous fraud, successfully accomplished before the very eyes of royalty; and if we could get at the history of the transactions of this diamond factory, we should find the fraudulent business still lively. Many have been deceived who never found out the cheat put upon them; others have discovered it to their sorrow. We give one instance from among many, borrowed from a contemporary.

"A few years ago, an English lady entered the shop belonging to the proprietor of the factory, situate on the Boulevard, looking rather flushed and excited, and drawing from her muff a number of morocco cases of many shapes and sizes, opened them one after another, and spread them on the counter.

"I wish," she said, "to inquire the price of a *parure* to be made in exact imitation of this; that is, if you can imitate the workmanship with sufficient precision for the distinction never to be observed."

M. B—— examined the articles attentively, assessed their price, and gave the most unequivocal promise that the *parure* should be an exact counterpart of the one before him. The lady insisted again. She was urgent, even much, as is the case with the fair sex in general. Was he sure the imitation would be perfect? Had he observed the beauty and purity of these stones? Could he imitate the peculiar manner in which they were cut, &c.

"Soyez tranquille, madame," replied M. B——; "the same workman shall have the job, and you may rely on having an exact counterpart of his former work."

The lady opened her eyes in astonishment and alarm; and M. B—— added, by way of reassuring her: "I will attend to the order myself, as I did when I received the commands of Milor ———, who ordered this very *parure*, I think, last February," and with the greatest unconcern, he proceeded to search his ledger, to ascertain which of his workmen made it, and the date of its delivery. Meanwhile, the lady had sunk down in a swoon. The milor named by the tradesman was no other than her own treacherous lord and master, who had forestalled her, by exchanging Randall and Bridge's goodly work against M. B——'s deceptive counterfeit, no doubt to liquidate his obligations on the turf. The vexation of the lady on recovering from her fainting-fit may be imagined; she reproached the diamond-maker with having assisted her husband in deceiving her, and retired mortified at the idea that she herself had never detected the difference between the false and the real. Many times had she worn the glittering gems, believing them to be the same she had brought in her casket from England."

We have heard it said, that many of the snuff-boxes given away as marks of royal or imperial favor are adorned with diamonds made in M. B——'s factory; and that Mehemet Ali, the late Pacha of Egypt, was the first to give away the costly looking shams. If this be true, it would only be fair to expose the mighty

personages, as well as cheating grocers. Let the recipients of snuff-boxes and diamond-rings see to it. A mock tiara, that may be bought for 600 francs, will look as well as a real one worth £1,000. What, then, shall be said of minor articles?

Correspondence.

PARIS, November 27, 1855.

As I advised you in my last letter, the distribution of awards obtained by artists at the close of the great exhibition, took place formally on the 15th November. The government neglected nothing in order to render this ceremony the most imposing possible. The emperor presided at the assembly; and he bestowed, with his own hand, upon a certain number of artists, the medals and decorations allotted to them.

The list of awards is too long, also containing too many unknown names, to send you *ad extenso*. I will confine myself to designating the most important. Let us begin by stating that M. Ingres has been appointed grand-officer of the Legion of Honor, an exceptional mark of distinction, with which neither painters nor sculptors are scarcely ever favored. Eugene Delacroix and Gudin have received commanders' crosses; the grade of officer is bestowed upon Cabat, Calamatta, Heim, Henriquel Dupont, Maréchal, and the two sculptors Barye, and the Prussian Ranch. The list of chevaliers is longer: it is composed first of twenty-four painters, as follows:

A. Benouville.
Bida.
Cabanel.
Eastlake.
Ed. Frère.
Fournier.
Glaize.
Gérôme.
Gendron.
Genod.
Hamon.
Hildebrandt.

Jalabert.
Jedroun.
Kacbach.
Loubon.
Adolphe Leleux.
Madou.
Mulready.
Pollet.
Steinle.
Rideman.
Vetter.
Wylid.

One engraver only, Caron, has been honored with this distinction; there are two architects, Cockerell and Zanth; the sculptors have obtained eight crosses among them, Bonassieux, Guillaume, Gibson, Lanno, and Richtel.

These decorations, you are aware, emanate directly from the government. *L'Administration des Beaux Arts* reserved to itself the privilege of recompensing artists not so much on account of their works exposed in the exhibition, as in consideration of the efforts and success of their whole lives. Medals have accordingly been appropriated upon the suggestion of the International Jury, who voted secretly upon each name, keeping in sight, however, the merit of the works exposed.

In PAINTING, ten large medals of honor have been given, to

Cornelius.
Decamps.
Eug. Delacroix.
Heim.
Henriquel Dupont.*

Ingres.
Landsaer.
Leys.
Meissonnier.
H. Vernet.

Medals of the first class number forty-

eight. They have been bestowed upon the following artists:

Abel de Pujol.
Achenbach.
Bida.
Mlle. Rosa Bonheur.
Brassacast.
Couture.
Cabanel.
Calame.
Calamatta.
Cattermole.
Chenavard.
Cogniet.
Corot.
Dauzats.
Hippolyte Flandrin.
Forster.
François.
Grant.
Gordoy.
Gudin.
Hébert.
Madame Herbelin.
Hookert.
Paul Huet.

Isabey.
Jalabert.
Knaus.
Kaulbach.
Larivière.
Leslie.
H. Lehmann.
Maréchal.
Charles Müller.
Mouilleron.
Madrazo.
Robert F'eury.
Robinson.
Rauget.
Theo. Rousseau.
Roqueplan.
Henri Scheffer.
Schneitz.
Stanfield.
Tryon.
Tideman.
Thornburn.
Willems.
Winterhalter.

The medals of the second and third classes are more numerous; as to "honorable mention," it is about as easy to count them as it is the stars in the heavens on a summer night. You will admit, that with such an extensive list, I cannot give it entire. Sufficient to say that the American artists, Messrs. Healy and Rossiter, have obtained the first, a medal of the second class; and the second, a medal of the third class. Mr. William Hunt is overlooked, and it is not just that he should be so.

In SCULPTURE, four large medals of honor have been awarded to Dumont, Duret, Rietschell, and Rude. This last-named, a skillful statuary, and one justly celebrated, died a few days before the distribution of awards. I abstain from mentioning the medals of the second class.

In ARCHITECTURE, large medals of honor to Barry, the English architect, and to Dubars, the restorator of the Chateau de Blois.

The result is very unsatisfactory, and it will, doubtless, call forth many criticisms, for it is evident that artists of very inferior merit have been ranked among the first. Who will ever admit, for example, that Winterhalter is a genuine portrait painter,—an artist to be placed by the side of Rousseau, Cattermole, or Corot? The distinction granted to Madrazo is evidently a piece of international courtesy. I might cite other singular decisions, and point out positive mistakes. The truth is, that, in these delicate matters, the judgment of contemporaries is always more or less sullied by ignorance and feeling, and the future alone can impartially decide upon the reputation of all.

P. MANTZ.

THE most correct taste is not that which is satisfied only with the even and elaborate structures of Art, but that which relishes the wild, flowing, and beautiful, though often irregular, outlines of nature. Give us the craggy rocks and the lofty mountain, though we take with them the storm and the avalanche, rather than confine us to the dreary and monotonous, though secure level of the plain. To be sure, writers may abuse the freedom of nature, and there is danger that liberty may degenerate into license; but it is better, to run the hazard of an occasional shock to our taste than to endure the silent and eternal gnawings of ennui.—*North American Review*.